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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 10/670,534 | 09/25/2003 | Jinru Bian | 03010US | 5465 |
| 61611 | 7590 | 10/13/2006 | EXAMINER | |
| ROHM AND HAAS ELECTRONIC MATERIALS CMP HOLDINGS, INC. 451 BELLEVUE ROAD NEWARK, DE 19713 | | | MARCHESCHI, MICHAEL A | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1755 | |

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/670,534

Applicant(s)

BIAN ET AL.

Examiner

Michael A. Marcheschi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 11 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) 13-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/31/06 has been entered.

In the following claims, CDO means carbon doped oxide (see section [0063] of the specification).

Claims 1-4 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite as to the limitation “R² is -H...or a seleno group and -OR⁷” (lines 8-9 which defines formula I)) because the examiner is unclear as to if the “OR⁷” is part of the grouping. The use of the term “and” renders this unclear.

Claim 1 is also indefinite as to the limitation “-OR⁷” (defined for formula II) because the examiner is unclear as what the “R⁷” of this group is. Is it the same as that defined for formula 1 above?

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Claims 1-3 are rejected under 35 U.S.C. 103(a) as being obvious over EP 1,229,093.

The reference teaches in the abstract and sections [0016]-[0039], a polishing composition having a pH within the claimed range which comprises hydrogen peroxide, an abrasive, an organic ammonium salt and imidazole. The amounts for the components are defined.

The reference clearly teaches a composition which contains all of the claimed components and although the reference does not literally define the amounts in terms of weight percent, it is the examiners position that when the reference amounts are converted to weight percent they will encompass the claimed range. Although the reference does not literally define the selectivity, this aspect is obvious because it is the examiners position the composition of the reference is expected to yield this property because the composition is the same (contains the same materials in the same amounts) and the same composition is expected to provide the same results absent evidence to the contrary. In addition, the reference teaches that tantalum nitride and CDO can be polished.

To overcome this rejection it is suggested that the specific hydrazine derivatives defined in claim 4 be included in claim 1.

Claims 1-4 and 11 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of copending Application No. 10/830,268 (publication number 20050236601) for the same reasons set forth in the previous office action which are incorporated herein by reference.

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Claims 1-4 and 11 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 10/670,587 (publication number 20050070211) in view of Liu et al. (789) for the same reasons set forth in the previous office action which are incorporated herein by reference.

Claims 1-4 and 11 are rejected under 35 U.S.C. 103(a) as being obvious over Wang et al. (2003/0170991) alone or in view of Tsuchiya et al. (268).

Wang et al. teaches in the abstract sections [0015], [0016], [0025], [0027], [0028] and table 3, a polishing composition having the claimed pH (6.5) which comprises 0.1-30% of an oxidizing agent (claimed materials), 0.05-10% of a polishing additive (amines or imines or amino acids) and 5% or less of a quaternary ammonium salt. Table 3 defines that guanidine nitrate is used as the additive.

Although the primary reference does not literally state "imine derivatives", the claimed materials are obvious because table 3 of the reference teaches a composition that the additive is **guanidine nitrate**. One reading the reference, as a whole, would have appreciated that **guanidine nitrate** can be the additive used in the broad composition as broadly disclosed by the reference. In the alternative, the primary reference states that the polishing additive can be an amino acid and this makes obvious at least one of the claimed imine derivatives (i.e. arginine) because the secondary reference clearly teaches that arginine is an amino acid (see section [0063] of the secondary reference).

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With respect to the ammonium salt, the broad recitation of quaternary ammonium salt renders the claimed species obvious because the reference teaches in section [0029] that the stopping compound (quaternary ammonium salt) contains 4 or more carbon atoms and an alkyl group (claimed group) as is defined by the formula set forth on lines 29-35 of section [0029]. This formula reads on the claimed formula. In view of this formula, it is the examiners position that one skilled in the art would have appreciated that the recitation of quaternary ammonium salts of the primary reference would encompass the claimed ammonium salts. Although the primary reference does not literally define the selectivity, this aspect is obvious because it is the examiners position the composition of the reference is expected to yield this property because the composition is the same (contains the same materials in the same amounts) and the same composition is expected to provide the same results absent evidence to the contrary.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being obvious over Fujii et al. (526) in view of Uphues et al. (749).

Fujii et al. teaches in the abstract and sections [0033], [0053], [0068], [0076], [0084]-[0086] and [0090], a polishing composition having the claimed pH which comprises 0.5-20% of an oxidizing agent (hydrogen peroxide), 0.001-0.1% of an organic ammonium salt (material within the scope of the claimed formula), 0.01-10% of an amino acid having 2-10 carbon atoms and water.

Although the primary reference does not literally states "imine derivatives", the claimed materials are obvious because the reference states that an amino acid having 2-10 carbon atoms can be present and this makes obvious at least one of the claimed imine derivatives (i.e. arginine)

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because the secondary reference clearly teaches that arginine is an amino acid having the amount of carbon atoms defined by the primary reference (see column 2, lines 46-47 of the secondary reference).

With respect to the ammonium salt, the primary reference discloses a material which is within the scope of the claimed formula.

Applicant's arguments filed 7/31/06 have been fully considered but they are not persuasive.

With respect to hydrazine derivative, the examiner acknowledges applicant's declaration filed 2/17/06. In this declaration, applicants state that hydrazine derivatives do **not** include imidazole in view of the different structure (and thus has omitted this from the claims and section [0031] of the specification in the previous response). The examiner acknowledges this, but sections [0014], [0016] and [0021], which define the formula of the hydrazine derivative, state that the R groups can be a hydrocarbon group (section [0014]), said hydrocarbon group being a heterocyclyl group (section [0016]). Section [0021] states that the heterocyclyl group can be **imidazole**, thus when these sections are viewed together, they imply that the **derivative** is imidazole. Since imidazole is defined in the specification as a hydrazine derivative, it is the examiner's position that any reference that uses this component can be applied. Applicants' cancellation of imidazole in section [0031] of the specification presents confusion (is inconsistent with the above sections, at least) because the other sections, as defined above clearly imply that imidazole is a hydrazine derivative. **If imidazole is clearly not intended and incorrectly defined as being a hydrazine derivative, all of the references in the specification to**

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imidazoles, as well as imidazole structures, should be excluded (i.e. see section [0021]). The examiner is interpreting the hydrazine derivative to be consistent with that disclosed in the specification and the specification in section [0021] clearly discloses that imidazole is a hydrazine derivative.

Applicants argue that EP 1,229,093 does not teach the claimed composition because the imidazole, as defined by this reference is not one of the claimed derivatives (hydrazine derivative) and submit a declaration to this effect. In response, in view of the inconsistency of the specification and claims defined above, it is the examiners position that imidazole can still be within the scope of the claims. In addition, claim 4 now clearly defines an imidazole.

Applicants argue that since claims 1-7 of copending Application No. 10/830,268 (publication number 20050236601) lack either a guanidine, hydrazine or their derivatives, this rejection is improper. This is not persuasive because this copending application clearly claims the use ammonium salt which is defined as a mixture of two materials one being tetramethylguanidine (i.e. claimed removal agent). In addition, the copending application clearly defines the inhibitor as imidazole and this is clearly not excluded from the claimed invention because of the reasons defined above.

Applicants argue that since claim 1-8 of copending Application No. 10/670,587 (publication number 20050070211) lack an ammonium salt, this rejection is improper. This is not persuasive because this copending application uses 0.05-25% of a nitrogen containing compound and this is defined as **tetramethylgaunidine**. Tetramethylguanidine is used as applicants ammonium salt (see section [0050]), thus the same component is used. Applicants

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also state that combining of references appears to represent a recognition that the claimed invention is patentably distinct. This is not a proper argument against the above rejection.

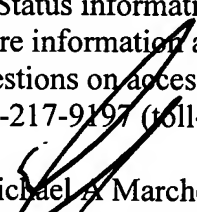
Applicants argue that Wang et al. (2003/0170991) does not teach the claimed specific salt. The examiner disagrees because the broad recitation of quaternary ammonium salt renders the claimed species obvious because the reference teaches in section [0029] that the stopping compound (quaternary ammonium salt) contains 4 or more carbon atoms and has alkyl groups as is defined by the formula set forth on lines 29-35 of section [0029]. This formula reads on the claimed formula. In view of this formula, it is the examiners position that one skilled in the art would have appreciated that the recitation of quaternary ammonium salts of the primary reference would encompass the claimed ammonium salts. In addition, although a formula might infer specific ammonium salts, applicants must clearly show reasons why the reference materials do not fall within the scope of the formula as claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10/06
MM


Michael A. Marcheschi
Primary Examiner

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